AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. - 28. (Cancelled)

29. (Original) A method of detecting a target analyte, the method comprising the steps of:

a) providing a heterodiamondoid-containing probe;

b) binding the heterodiamondoid-containing probe to the target analyte, thus creating a biological label;

c) exciting the biological label with energy such that the biological label is caused to luminesce; and

d) detecting light emitted from the excited biological label.

30. (Currently Amended) The method of claim 29, wherein the energy is in the form of a beam of photons, such that the ~~luminescent event~~ luminescence is photoluminescence.

31. (Currently Amended) The method of claim 29, wherein the energy is in the form of a beam of electrons, such that the ~~luminescent event~~ luminescence is electroluminescence.

32. (Currently Amended) The method of claim 29, wherein the energy is in the form of heat, such that the ~~luminescent event~~ luminescence is thermoluminescence.

33. (Currently Amended) The method of claim 29, wherein the energy is in the form of chemical energy, such that the ~~luminescent event~~ luminescence is chemiluminescence.

34. (Currently Amended) The method of claim 29, wherein the energy results from the frictional contact between two surfaces, such that the ~~luminescent event~~ luminescence is triboluminescence.

35. (Currently Amended) The method of claim 29, wherein the heterodiamondoid-containing probe comprises at least one diamondoid comprising a diamondoid lattice having multiple diamondoid lattice sites, each of the diamondoid lattice sites containing a carbon atom, and at least one vacancy or pore, and further wherein step a) includes replacing the carbon atom at one of the diamondoid lattice sites with ~~substitutionally positioning~~ a nitrogen heteroatom, wherein the replacement occurs at the ~~on a~~ diamondoid lattice site adjacent to the at least one vacancy or pore.

36. (Currently Amended) The method of claim 29, wherein the heterodiamondoid-containing probe comprises a diamondoid-containing material having a bandgap and further including the step of positioning impurity atoms within the diamondoid-containing material ~~to create~~ creating electronic states within the bandgap of the diamondoid-containing material.

37. (Currently amended) The method of claim 29, further including the step of passing the biological label through a cell membrane after ~~the heterodiamondoid-containing probe is bound to the target analyte~~ step b) of binding the heterodiamondoid-containing probe to the target analyte.

38. (Currently Amended) The method of claim 29, further including the step of passing the heterodiamondoid-containing probe through a cell membrane before step b) of binding the heterodiamondoid-containing probe to the target analyte~~, and then reacting the heterodiamondoid-containing probe with the target analyte~~.

39. (Original) The method of claim 29, wherein the detection of light emitted from the biological label is carried out using a photomultiplier tube.

40. (Original) The method of claim 29, wherein the detection of light emitted from the biological label is carried out using a charge-coupled device.